

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF TEXAS**

HIGH ENERGY OZONE LLC d/b/a FAR- )  
 UV STERILRAY and S. EDWARD )  
 NEISTER, )  
 )  
 Plaintiffs, )  
 )  
 v. )  
 )  
 LARSON ELECTRONICS LLC, )  
 )  
 Defendant. )

Civil Action No. 3:21-cv-1166

**JURY TRIAL DEMANDED**

## COMPLAINT

Plaintiffs High Energy Ozone LLC d/b/a Far-UV Sterilray (“HEO3”) and Mr. S. Edward Neister (“Mr. Neister”) (collectively, “Plaintiffs”), allege as follows:

# INTRODUCTION

1. More than fifteen years ago, physicist S. Edward Neister developed and patented methods for deactivating or destroying harmful microorganisms using a new spectrum of ultraviolet (UV) light. Mr. Neister's methods included the development and use of Krypton-Chloride excimer lamps that emit a peak wavelength at 222 nm in conjunction with other wavelengths. Unlike the 254 nm UV light—which had been used for decades for sanitization but was dangerous to humans—applying 222 nm UV light does not penetrate human skin or eyes, making it far better and more useful than traditional lamps and methods of use.

2. Mr. Neister's patented technology became the foundation for the family business. Mr. Neister and his brother John Neister originally founded the company

that would become HEO3 in 2005 in a small town in New Hampshire. HEO3 is producing and selling lamps designed to perform Mr. Neister's patented methods of killing harmful microorganisms.

3. The global COVID-19 pandemic took the world by surprise in early 2020, but the hard work of and vision by the Neister brothers anticipated such a crisis. Their Excimer Wave Sterilray™ technology, products, and patented methods positioned HEO3 to be a global leader in UV light disinfection technology, providing sanitization devices to aid in the fight against the disease.

4. As a result of the pandemic, interest in UV light disinfection technology reached new heights. Market entrants sprung forth to capitalize on sanitization using far-UV light in the 222 nm range—including through unauthorized use of HEO3's patented technology.

5. HEO3's patented technology asserted in this case includes U.S. Patent Nos. 8,975,605 (the "605 patent") and 9,700,642, (the "642 patent") (collectively, the "Asserted Patents"), true and correct copies of which are attached hereto as Exhibits 1 and 2, respectively.

6. Defendant Larson Electronics LLC ("Larson"), founded in 1973, is one such company trading on HEO3's patented technology. As described below, multiple Larson products utilize HEO3's patented systems and methods.

7. To protect its hard-earned intellectual property rights, HEO3 sent a notice letter to Larson to notify it of HEO3's patents and to offer to open licensing discussions, a true and correct copy of which is attached as Exhibit 3. But still Larson refused to cease its infringing activities. This action followed.

### **NATURE OF THE ACTION**

8. This is an action for infringement of the '605 patent and the '642 patent pursuant to the Patent Laws of the United States of America, 35 U.S.C. §§ 100 *et seq.*

### **PARTIES**

9. Plaintiff HEO3 is a company organized and existing under the laws of the State of New Hampshire with its principal place of business at 30 Centre Road, Suite 6, Somersworth, NH 03878.

10. Plaintiff S. Edward Neister resides and works in the state of New Hampshire. He is the founder of HEO3 and its Chief Technology Officer.

11. On information and belief, Defendant Larson is a corporation organized and existing under the laws of the State of Texas with its principal place of business at 9419 U.S. Highway 175, Kemp, TX 75143.

### **JURISDICTION AND VENUE**

12. This Court has subject matter jurisdiction over this action under at least 28 U.S.C. §§ 1331, 1338.

13. This Court has personal jurisdiction over Larson because it is incorporated in the State of Texas. On information and belief, Larson maintains its principal place of business in this District.

14. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(c) and 1400(b) because Larson maintains its principal place of business in this District and has committed acts of infringement in this District.

## **FACTUAL BACKGROUND**

### **HEO3's 222 nm UV Technology**

15. HEO3 is a leading developer of disinfection equipment using 222 nm UV technology. HEO3's disinfection technology provides a safe and environmentally sound means of disinfection using far-UV light to kill bacteria, viruses, mold, and fungi in seconds or less. It has been validated by over 40 third-party labs as having a greater than 99.99% effective kill rate.

16. HEO3's technology permits users to sterilize surfaces without harsh chemicals. Additionally, unlike more commonly used UV sterilization techniques, HEO3's technology is mercury free and does not produce ozone—a significant advance in terms of safety and environmental impact.

17. HEO3 offers a wide range of products utilizing its 222 nm UV technology. These include, for example: luminaire fixtures; air and surface disinfection units for disinfecting ambient air and surfaces in a room; surface disinfection rails and disinfection wands for disinfecting surfaces and air; pathogen reduction boxes for disinfecting high-touch items (such as handheld medical equipment) that can be placed inside the boxes; and airduct units for disinfecting air passing through HVAC units.

18. HEO3 does business under the tradename Far UV Sterilray™ and its products feature Mr. Neister's patented Excimer Wave Sterilray™ Technology. Customers across the globe use Excimer Wave Sterilray™ products to create safer work, home, and medical environments.

19. As described on its website, HEO3's goal is to reduce the spread of infections and the burdens of such illnesses on our healthcare system. Over the past year alone, HEO3 has been approached by numerous and diverse organizations—including NFL teams, airlines, and robotic companies that specialize in the disinfection of office spaces, military barracks, public transportation, and hospitals—that have expressed interest in using HEO3's technology to help prevent spread of COVID-19.

20. HEO3's 222 nm UV technology is described and claimed in the Asserted Patents, on which Mr. Neister is the sole inventor. Mr. Neister has worked in the field of laser and UV light technology for over six decades. Mr. Neister drew on his decades of experience to develop HEO3's 222 nm UV technology claimed in the Asserted Patents.

21. Prior to Mr. Neister's inventions, UV disinfection methods typically used light at 254 nm generated by mercury-based lamps. Mr. Neister discovered that single line wavelengths emitted from an "excimer" lamp—a lamp using inert gases to generate photons at wavelengths matching the maximum absorption bands for DNA nitrogenous bases, proteins, amino acids, and other component bonds of microorganisms—could be significantly more effective than standard 254 nm photons for destroying DNA. As described in the '605 patent, "[k]ill action times are reduced from 10's to 100's of seconds to times of 0.1 seconds." Ex. 1 at 4:65-67.

22. One of the wavelengths Mr. Neister found to be particularly useful for disinfection was 222 nm, falling within the "far-UV" range. HEO3's Excimer Wave Sterilray™ products utilize photons at this wavelength, amongst others.

23. Recognizing Mr. Neister's discoveries, the United States Patent and Trademark Office ("USPTO") issued the Asserted Patents. Mr. Neister is the sole inventor of the Asserted Patents and related applications that are currently pending.

**Larson's Far-UV Sanitation Lighting Products**

24. Although Larson has been in the lighting business for decades, only with the rise of the COVID-19 pandemic has it begun to manufacture, market, and sell lighting products containing Far-UV wavelengths including 222 nm. Upon information and belief, in or around June 2020, Larson began fabricating and selling products that perform Mr. Neister's patented processes for destroying or deactivating the DNA or RNA (*i.e.*, the organic bonds and proteins) of microorganisms on substances or surfaces of the Asserted Patents.

25. In Larson's "Far UV Catalog 2020, a true and correct copy of which is attached hereto as Exhibit 4, Larson touts itself as a "one-stop shop for all of your UV sanitation needs," and it "caters to custom fabrication and rapid engineering for far-UV products". *See* Ex. 4, Far UV Catalog 2020, at 2. A search of Larson's website, [www.larsonelectronics.com](http://www.larsonelectronics.com), reveals more than 120 lighting products for sanitation. These products incorporate either "ozone-free excimer lamps or compact microplasma boards that generate far-UV 222 nm bands." *Id.* at 1.

26. Larson's Far UV Catalog 2020 states the following:

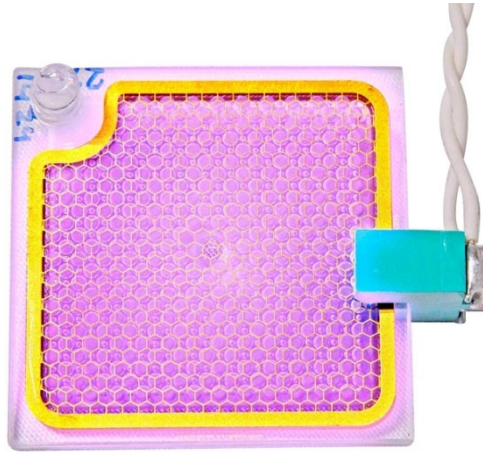
Far-UV sanitation lights from Larson Electronics are ultraviolet (UV) devices for disinfecting surfaces, equipment and the air. These units emit far-UV 222 nm light, which is capable of eliminating up to 99% of viruses, bacteria, mold and spores. Far-UV 222 nm light is considered to be eye and skin safe for humans. Long-term use of far-UV lamps does

not cause inflammation, redness or irritation. This time-saving solution does not require rooms or spaces to be empty prior to UV treatment. Unlike conventional UV 254 nm bands that can cause burns on the skin and corneal damage, far-UV wavelengths also do not require personal protective equipment during sanitation (see Far-UV Fact Sheet for more information). As a result, the far-UV disinfection products in this catalog are recommended for use in the following: occupied areas, industrial, businesses, commercial locations, transit areas, schools, daycares, senior-care facilities, healthcare establishments, hospitals, offices and more.

Ex. 4 at 1.

27. In terms of specific products, Larson states, “[a]ll products in this catalog are equipped with far-UV 222 nm lamps, which can inactivate 99% viruses, bacteria, mold and spores.” *Id.* at 3. Furthermore, in response to the question, “What types of far-UV 222 nm lights are used in these products?” Larson answers: “[a]rtificial light sources that generate far-UV 222 nm light and are found in the sanitization products in this catalog include excimer lamps and microplasma boards,” and the specialty excimer lamps include “one atom of krypton (Kr) and one atom of chlorine (Cl).” *Id.* at 4.

28. Larson’s website reflects at least three categories of 222 nm light sources that Larson fabricates into lighting products. First, Larson markets and sells a 10W Far UV Microplasma Board – (1) 10W Microplasma Board, 222 nm UVC Sanitation – Delrin Mount - Power Supply with 120V Plug (FRL-EMP-FUVC-MP-10-2X2-KT-120V) (hereinafter, “Microplasma Board”), as shown below.



Ex. 5, Microplasma Board Spec Sheet at 1. Larson states that “[t]his unit is Made in USA – Manufactured in Texas.” *Id.* The product “features a 2” x 2” glass chip and disinfects 99% of viruses, bacteria, mold and spores from ceilings in occupied areas. This eye and skin safe disinfection unit uses one 10-watt microplasma board that emits far-UV 222 nm germicidal light.” *Id.*

29. The Microplasma Board includes the following “Ratings”:

**Ratings**

222nm Germicidal Light  
Kills 99% of Viruses and Other Germs  
Mercury Free Lamp  
Instant-On Lamp, No Warm Up Time  
More Efficient & Effective than UVC Lamps  
No Harmful UVC Emissions  
No Block Off/Bandpass/Cutoff Filters) Needed  
Skin Safe & Eye Safe  
Ozone Free  
Low Heat Output  
EPA Reg. No 98409-1  
EPA Est. No. 98409-TX-1



*Id.* “Suggested Applications” include: “Sanitation, disinfection, retail spaces, lobbies, commercial locations, industrial parks, schools, public transportation hubs, airports, office buildings, medical centers, and more; kills 99% of viruses, bacterial, mold, and spores.” *Id.* at 2.

30. Larson fabricates and sells down-light products using one or more of its Microplasma Boards, including the following representative products: Far-UV Sanitation Fixture; Far-UV Recessed Can Light (6”, 8”, 10”, 12”); Far-UV Gimble Track Light; Far-UV Recessed Square Light (6”, 8”, 10”, 12”); 12” Far-UV Sanitation Strip Light; 10W Far-UV Sanitation Light; and 10W Far-UV Disinfection Desktop Light (collectively, “Representative Microplasma Board Products”).

31. One such Representative Microplasma Board Product is the Far-UV Recessed 12” Can Light – (1) 10W Microplasma Board, 222 nm UVC Sanitation – Recessed Mount (IND-CDL-RD-12-FUVC-MP-1L-V1). *See* Ex. 6, Can Light Spec Sheet, and shown below.



Larson states, “[t]his eye and skin safe disinfection unit uses one 10-watt microplasma board that emits far-UV 222 nm germicidal light,” and that, “[t]his far-UV unit is capable of achieving up to 3 log (99.9%) cumulative disinfection per day.” *Id.* at 1-2.

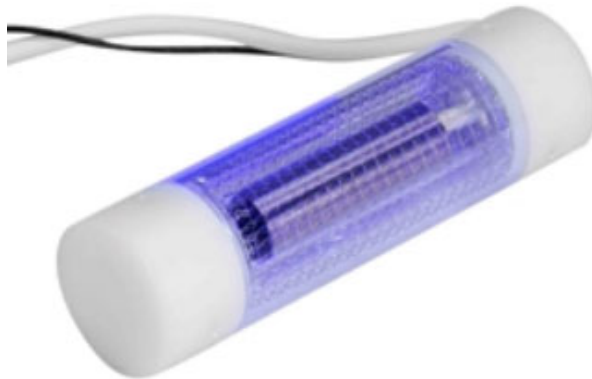
32. Additionally, Larson includes the following table:

Distance from Cart	Irradiance/Second	Exposure Time Required*	Beam Width	Beam Height
3 inch	417.73 uW/cm2	14.36 seconds	0.5 ft	0.5 ft
6 inch	236.35 uW/cm2	25.39 seconds	1 ft	1 ft
12 inch	118.73 uW/cm2	50.54 seconds	1.75 ft	1.75 ft
18 inch	65.96 uW/cm2	1.52 minutes	2.5 ft	2.5 ft
2 foot	872.35 uW/cm2	2.34 minutes	3 ft	3 ft
3 foot	456.77 uW/cm2	4.47 minutes	4.5 ft	4.5 ft
4 foot	230.26 uW/cm2	7.91 minutes	6 ft	6 ft
5 foot	147.36 uW/cm2	12.03 minutes	7.5 ft	7.5 ft
6 foot	102.34 uW/cm2	16.88 minutes	9 ft	9 ft
7 foot	75.19 uW/cm2	22.40 minutes	10.5 ft	10.5 ft
8 foot	57.56 uW/cm2	28.54 minutes	12.25 ft	12.25 ft
9 foot	45.48 uW/cm2	35.26 minutes	13.5 ft	13.5 ft
10 foot	36.84 uW/cm2	42.51 minutes	15.25 ft	15.25 ft
12 foot	25.58 uW/cm2	58.48 minutes	18.5 ft	18.5 ft
15 foot	16.37 uW/cm2	1.4 hours	23 ft	23 ft
18 foot	11.37 uW/cm2	1.9 hours	27.5 ft	27.5 ft
20 foot	9.21 uW/cm2	2.26 hours	30 ft	30 ft

\*Exposure time is based off of total irradiance. The above calculations are based on 12mJ total exposure. This level of exposure deactivates most organisms.

*Id.* at 2. Larson states, “[w]hen mounted at 8ft or below, this fixture effectively deactivates organisms twice in one hour, and is actively weakening organisms in the air and on surfaces. Airborne organisms will have a higher exposure rate while traveling through the air and closer to the fixture.” *Id.* Its “Applications” include: “Sanitation, disinfection, restaurants, retail spaces, lobbies, commercial buildings, industrial parks, schools, public transportation hubs, airports, office buildings, medical centers and more; kill 99% of viruses, bacteria, mold and spores.” *Id.* at 3.

33. Second, Larson fabricates and sells a 40W UV Excimer Lamp – 222 Far UVC Disinfection – Surface Mount – Quartz Glass/Ozone Free (FRL-EMX-6-40W-FUVC) (hereinafter, “Excimer Lamp”), as shown below:



Ex. 7, Excimer Lamp Spec Sheet at 1. Like the Microplasma Board, Larson states that “[t]his unit is Made in USA – Manufactured in Texas.” *Id.* This Excimer Lamp “offers 40 uW/cm<sup>2</sup> UV intensity at 222nm UV wavelength,” and “can disinfect 99% of viruses, bacteria, mold and spores in facilities and on surfaces.” *Id.* at 1-2.

Furthermore, Larson states that, “[c]onsidered to be eye and skin safe, the far-UV lamp offers instant start and cool operation.” *Id.*

34. The Excimer Lamp includes the following “Ratings/Features”:

**Ratings/Features**

222nm Germicidal Light

Kills 99% of Viruses and Other Germs

Mercury Free Lamp

Instant-On Lamp, No Warm Up Time

More Efficient & Effective than UVC Lamps

No Harmful UVC Emissions

No Block Off/Bandpass/Cutoff Filters) Needed

Skin Safe & Eye Safe

Ozone Free

Low Heat Output

*Id.* at 1. “Suggested Applications” include: “Sanitation, disinfection, commercial locations, industrial parks, medical centers, labs, manufacturing and semiconductors; kills 99% of viruses, bacteria, mold, and spores.” *Id.* at 2.

35. Larson fabricates and sells down-light products using one or more of its Excimer Lamps, including the following representative products: 120W Far-UV Excimer Disinfection Fixture – (3) 222nm Lamp –Pivoting Back Mount (3-Foot or 4-Foot); 80W Far-UV Excimer Disinfection Fixture – (2) 222nm Lamp – Pivoting Back Mount (3-Foot); 40W Far-UV Excimer Disinfection Fixture – (1) 222 nm Lamp – Pivoting Back Mount (2-Foot); 120W Far-UV Excimer Disinfection Fixture – (3) 222nm Lamp – L Bracket End Mount (3-Foot); 80W Far-UV Excimer Disinfection Fixture – (2) 222nm Lamp – L Bracket End Mount (2-Foot, 3-Foot, 4-Foot); 40W Far-UV Excimer Disinfection Fixture – (1) 222nm Lamp – L Bracket End Mount (2-Foot); and 40W Far-UV Excimer Disinfection Fixture – (1) 222nm Lamp – L Bracket End Mount (1-Foot) (collectively, “Representative Excimer Lamp Products”).

36. One such Representative Excimer Lamp Product is the 120W Far-UV Excimer Disinfection Fixture – (3) 222nm Lamp – 3-Foot Fixture – L Bracket End Mount (IND-DHA-FUVC-EX-36-3L-V1). *See* Ex. 8, L Bracket Lamp Spec Sheet, and shown below.



Larson states that this “sanitation fixture is a powerful and sleek lighting solution for restaurants, businesses, busy locations and occupied areas.” *Id.* at 2. Germicidal excimer lamps emit far-UV 222 nm light that is generated by specific excimer molecules.” *Id.* “Applications” include: “Sanitation, disinfection, restaurants, retail spaces, lobbies, commercial locations, industrial parks, schools, public transportation hubs, airports, office buildings, medical centers and more; kill 99% of viruses, bacteria, mold and spores.” *Id.*

37. Larson also fabricates and sells a handheld Far-UV light product that incorporates the Excimer Lamp called the Far-UVC Handheld Surface Sanitizer – (1) 40W 222nm Excimer Lamp – Aluminum – 15’ 16/3 SOOW Cord (IND-HL-HDB-FUVC-EX-1L-120V-15C). *See* Ex. 9, Handheld Lamp Spec Sheet, and shown below.



Larson describes this product as a “Handheld Surface Sanitizer which can disinfect 99% of viruses, bacteria, mold and spores on surfaces, work stations, tables and desks, as well as devices, machines and personal equipment. This unit offers far-UV 222nm output and comes equipped with a 40-watt excimer lamp.” *Id.* at 2. The “Suggested Applications” include: “Sanitation, disinfection, retail spaces, lobbies, commercial locations, industrial parks, schools, public transportation hubs,

airports, office buildings, medical centers, casinos, labs, hospitals, work stations, hotels and more; kill 99% of viruses, bacteria, mold, and spores.” *Id.* at 3.

38. Third, Larson fabricates and sells, for example, 90W UV Excimer Lamp – 222nm Far UVC Disinfection – Surface Mount – Quartz Glass/Ozone Free (FRL-EMX-18-90W-FUVC) (hereinafter, “Excimer Bulb”), as shown below.



Ex. 10, Excimer Bulb Spec Sheet at 1. Like the Microplasma Board and the Excimer Lamp, Larson states that “[t]his unit is Made in USA – Manufactured in Texas.” *Id.* This exemplary Excimer Bulb “offers 80 uW/cm<sup>2</sup> UV intensity at 222nm UV wavelength,” and “can disinfect 99% of viruses, bacteria, mold and spores in facilities and on surfaces.” *Id.* at 1-2. Furthermore, Larson states that, “[c]onsidered to be eye and skin safe, the far-UV lamp offers instant start and cool operation.” *Id.* at 1.

39. The Excimer Bulb includes the following “Ratings/Features”:

**Ratings/Features**

222nm Germicidal Light

Kills 99% of Viruses and Other Germs

Mercury Free Lamp

Instant-On Lamp, No Warm Up Time

More Efficient & Effective than UVC Lamps

No Harmful UVC Emissions

No Block Off/Bandpass/Cutoff Filters) Needed

Skin Safe & Eye Safe

Ozone Free

Low Heat Output

EPA Reg. No 98409-1

EPA Est. No. 98409-TX-1

*Id.* This Excimer Bulb is “compatible with 120V AC and 240V AC, 60 Hz and is equipped with flying leads to allow operators to complete wiring connections” and “can be mounted using customer provided clamps or holders.” *Id.* at 2. “Suggested Applications” include: “Sanitation, disinfection, commercial locations, industrial parks, medical centers, labs, manufacturing and semiconductors; kills 99% of viruses, bacteria, mold and spores.” *Id.*

40. Larson fabricates and sells sanitation lighting products that incorporate one or more Excimer Bulbs, including the following representative products: Far-UV Sanitation Portal – (5) 222 nm Excimer Lamps – 304 SS/Power Cord; 40W Far-UV Sanitation Light – (1) 222 nm UVC Excimer Lamp – Wall Mount with (2) 6” Adjustable Arms; 40W Far-UV Excimer Disinfection Square Shoebox Fixture – (1) 222nm Lamp – 1-foot Fixture – Remote Ballast – Surface Mount Mount [*sic*]; 240W Far-UVC High Bay Fixture – (6) 222nm Excimer Lamps – Surface Mount; 18” Far-UV Sanitation Wall Sconce Light – (1) 40W 222nm Excimer

Lamp – Aluminum/Indoor Use; and Door Barrier Germicidal Far UV-C Fixture – (1) 40W 222 nm UV-C Excimer Lamp – 24” Wide – Hospital Grade Stainless Steel (collectively, the “Representative Excimer Bulb Products”).

41. One such Representative Excimer Bulb Product includes the Far-UV Sanitation Portal – (5) 222 nm Excimer Lamps – 304 Stainless Steel/Power Cord (IND-DWG-FUVC-5X-R1-120V-25C) (hereinafter, “Sanitation Portal”). *See, e.g.*, Ex. 11, Sanitation Portal Spec Sheet, as shown below.



“This sanitation portal consists of five, 40-watt excimer lamps. Each light offers 40 uW/cm<sup>2</sup> UV intensity at 222nm UV wavelength.” *Id.* at 2. Larson further advertises that the “Sanitation Portal can disinfect 99% of viruses, bacteria, mold and spores at entry/exit points and high traffic areas.” *Id.* It is “designed for standalone applications” and “can be deployed at entry/exit points of buildings, transit or high traffic areas and busy locations requiring sanitation.” *Id.* at 3. “Suggested



Applications” include: “Sanitation, disinfection, commercial locations, industrial parks, medical centers, labs, manufacturing and semiconductors; kills 99% of viruses, bacteria, mold and spores.” *Id.*

42. Each of Larson’s product spec sheets praise the safety and low risk of using 222 nm light for sanitation in occupied spaces:

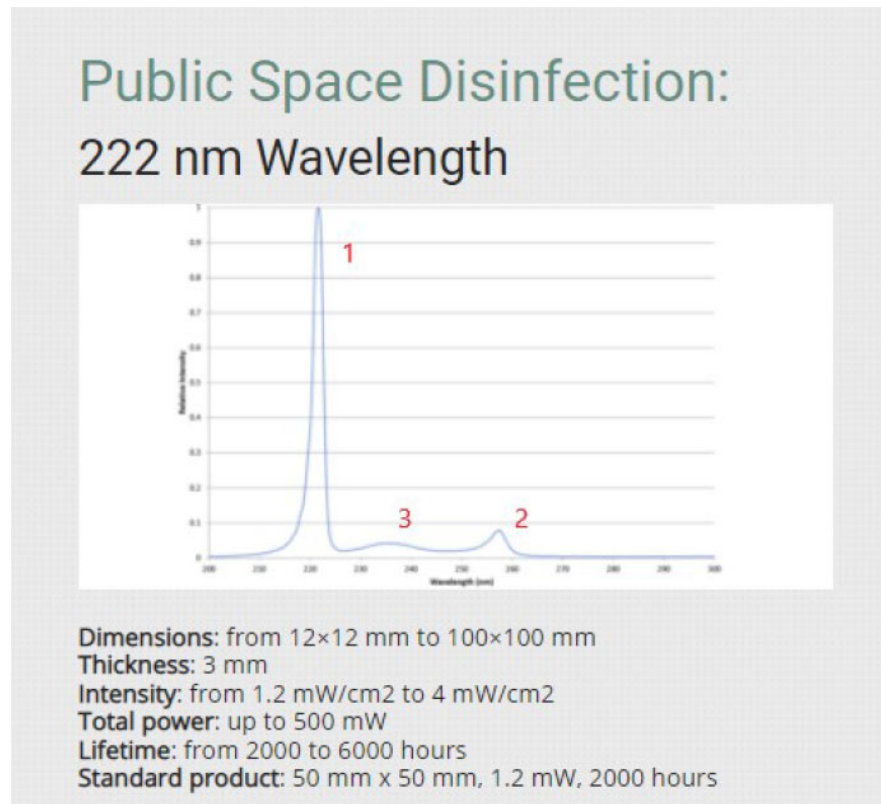
Far-UV 222 nm light is considered to be eye and skin safe for humans, allowing the lamps to be used in occupied areas with minimum risk. The 222 nm wavelength does not penetrate the cornea of the eye and cannot impose corneal impairment. Additionally, this UV band is blocked by the top layer of skin (stratum corneum) which protects underlying cells from damage. Exposure to far-UV 222 nm lamp does not cause skin inflammation or swelling. Due to these safety benefits, extensive protective clothing is not required when using this type of sanitation light in occupied areas.

*See* Exs. 5-6, 8-9 at 2; *see also* Exs. 7, 10-11 at 2 (“This lamp is considered to be eye and skin safe (the 222nm wavelength cannot penetrate the eyes and skin of humans), making applications suitable in occupied areas.”).

43. Upon information and belief, Larson imports its Microplasma Boards, Excimer Lamps, and Excimer Bulbs from outside the United States and either re-sells them alone (with a power source) or fabricates them into the various representative lighting products, described above. Larson describes these products as producing Far-UV or Far UV-C wavelengths of 222 nm. *See, e.g.*, Ex. 4.

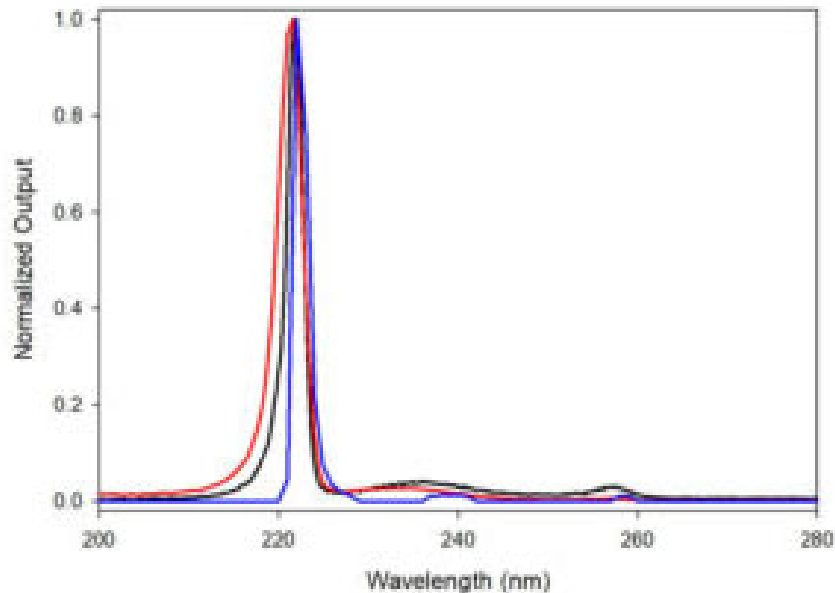
44. Larson’s Microplasma Boards, Excimer Lamps, and Excimer Bulbs—together with Larson’s Representative Microplasma Board Products, Larson’s Representative Excimer Lamp Products, and Larson’s Representative Excimer Bulb Products—are collectively referred to hereinafter as the “Accused Products.”

45. Excimer lamps made from Krypton and Chlorine gas, forming Krypton-Chloride (KrCl), like those fabricated and sold as the Accused Products by Larson emit photons according to known spectral features, including the signature three peaks shown below.



See, e.g., Ex. 12, [www.EdenPark.com](http://www.EdenPark.com) at 5-6 (annotations added). This graph demonstrates that lamps advertised as producing 222 nm wavelengths also produce wavelengths (peaks) around 238 nm and around 257 nm, as recognized and claimed by Mr. Neister's patents.

46. In a recent publication, UV experts show the same signature spectral analysis from tests of three commercially available KrCl excimer lamps like those sold by Larson.



*Image 2. Emission spectra from three commercially available KrCl\* lamps (data collected independently within authors' laboratories)*

See Ex. 13 at 4, Simons, R.M., Blatchley III, E.R., Linden, K., *Far UV-C and Its Potential for Disinfection Applications*, UV Solutions Magazine, Sept. 10, 2020 (available at <https://uvsolutionsmag.com/articles/2020/far-uv-c-and-its-potential-for-disinfection-applications/>), last accessed May 12, 2021. “Emission spectra from KrCl\* lamps show a dominant peak at 222 nm with full-width-half-maximum ~4 nm and often a long-wavelength “tail” through the UVGI UV-C range. These off-nominal emissions represent ~5% of the total power output of a typical unfiltered KrCl\* lamp. Though optical filtering can be used to limit emissions outside of the

222 nm peak, *excimer sources are not monochromatic (Image 2)*, and the full emission spectrum must be considered when evaluating their safety.” *Id.* (emphasis added).

### **Larson’s Willful Infringement**

47. Over the course of 2020, in the wake of the global COVID-19 pandemic, interest in and promotion of UV sanitation technology dramatically increased. HEO3 sought to stop unauthorized use of its 222 nm UV technology by notifying infringers, including Larson, of its patents.

48. On October 1, 2020, patent counsel for HEO3, Mr. David Connaughton, sent a letter to Mr. Robert Bresnahan, CEO of Larson, identifying HEO3’s issued patents and currently pending application. *See* Ex. 3. The letter further notified Larson that its “Indirect Far UV Air Disinfection Fixture Product” may infringe one or more of those patents. *Id.* Furthermore, the letter stated that Larson already knew of Mr. Neister’s patent, as evidenced from a publication on Larson’s website<sup>1</sup> that “both cites one of Mr. Neister’s patents, and notes the safety and use of 222nm for disinfection.” *Id.* at 2. The letter also offered to open licensing discussions. *Id.* Accordingly, Larson has been on notice of the Asserted Patents at least as early as October 2020.

49. On October 20, 2020, Mr. Lance Wyatt, Jr., outside counsel for Larson, responded with a letter back to Mr. Connaughton for HEO3. Mr. Wyatt’s letter, however, attempted only to avoid infringement by distinguishing the claims of two

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<sup>1</sup> “UV Effectiveness Against Coronavirus Publication,” *see* <https://www.larsonelectronics.com/images/product/lightingfacts/266985.pdf>.

patents not asserted by HEO3 and Mr. Neister here. The only substantive distinctions Mr. Wyatt attempted to make from the Asserted Patents lack merit.

50. First, Mr. Wyatt incorrectly stated that “Larson does not market a dual-single line lamp with multiple wavelength emissions, but rather just a single emission from a single lamp at 222nm.” As shown above (*e.g.*, ¶¶ 45-46), this statement is false as a matter of scientific fact because excimer sources are not monochromatic. *See* Exs. 12-13.

51. Second, Mr. Wyatt distinguished the “Indirect Far UV Air Disinfection Fixture Product” identified by HEO3’s patent counsel and the asserted patents because that product allegedly was not directed at skin (*emphasis added*):

Larson does not direct the UV light from its product to human or animal skin, nor does it actively induce its customers to do so. As described on Larson’s webpage, “[t]he IND-AH-FUVC-EX-LF-24-SF-WLM-10C-120V from Larson Electronics is an Indirect Far UV Air Disinfection Fixture that works to disinfect ***the upper room air*** of occupied spaces via germicidal ultraviolet (Far UV-C) rays.” And “[t]his indirect Far UV air disinfection fixture projects ultraviolet rays across ***the top of the room*** it is mounted in.”

52. No doubt Larson’s present offering of Far UV products are directed at sanitizing skin in occupied spaces. *See* Larson’s Far-UV Sanitization Light Products, *supra*. For example, Larson states in its Far UV Catalog 2020 that “Far UV 222 nm light is considered to be eye and skin safe for humans” and “[t]his time-saving solution does not require rooms or spaces to be empty prior to UV treatment.” Ex. 4 at 1. And these products are “***recommended for use***” by Larson “in the following: occupied areas, industrial, businesses, commercial locations,

transit areas, schools, daycares, senior-care facilities, healthcare establishments, hospitals, offices and more.” *Id.* (emphasis added).

53. Third, Mr. Wyatt alleged that “the claims of the ‘642 patent are invalid under 35 U.S.C. § 101 because they are directed to the natural phenomenon that UV light at a wavelength of 222 nm or 282 nm destroys DNA or RNA on human or animal skin.” *Id.* at 3 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012)). They are not. Claim 1 of the ‘642 patent does not merely harness a wavelength of UV light found in nature. Instead, it requires specific process steps of, for example, “generating photons,” which entail laboratory and manufacturing steps of combining inert gases in an excimer lamp (*see, e.g.*, Ex. 2, ‘642 patent at 12:32-34 (“The gas type is chosen so that the emitted UV photons are absorbed by the targeted microorganism or chemical.”)), with sufficient power to “destroy[] or deactivat[e] the DNA organic bonds and proteins of microorganisms.” *See, e.g., Rapid Litigation Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1047 (Fed. Cir. 2015) (“The method requires an artisan to carry out a number of concrete steps to achieve the desired preparation[.]”). Further, the claim requires “directing the photons” that have been “selected” (and correspond to certain wavelengths of 222 nm and 282 nm) including the “substance or surface” that is “human or animal skin.” *Id.* And like in *CellzDirect*, “the process for creating [the result] achieved a notable advance over prior art techniques,” here, for example, as compared to using the full UV spectrum for sanitation.

54. Finally, Mr. Wyatt conveyed Larson’s position that it “has no interest in licensing the Asserted Patents.” Accordingly, Larson has continued to willfully

infringe Mr. Neister's patents with knowledge of the Asserted Patents, and its infringement continues to this day.

**COUNT I**  
**(Infringement of U.S. Patent No. 8,975,605)**

55. Plaintiffs incorporate by reference the allegations of paragraphs 1-54 as if fully set forth herein.

56. The '605 patent, entitled "Method and Apparatus for Producing a High Level of Disinfection in Air and Surfaces," was duly and legally issued by the USPTO on March 10, 2015. *See* Ex. 1.

57. Mr. Neister is the owner of all rights, title, and interest in and to the '605 patent and HEO3 is its exclusive licensee. Mr. Neister and HEO3 are entitled to sue for past and future infringement.

58. Larson received notice of the '605 patent at least as early as October 2020, when HEO3's patent counsel sent a letter to Larson's CEO, Robert Bresnahan. *See* Ex. 3. Larson further received notice of the '605 patent at least as early as the filing of this Complaint.

59. Larson has directly infringed—literally and/or under the doctrine of equivalents—the '605 patent by making, using, selling, offering for sale in the United States, and/or importing into the United States sanitization equipment that practice one or more claims of the '605 patent, including but not limited to the Accused Products.

60. For example, claim 1 of the '605 patent recites:

1. A process for destroying or deactivating the DNA organic bonds and proteins of microorganisms comprising the steps of:

generating photons of at least two single line wavelengths from a non-coherent light source selected from the group consisting of at least two wavelengths being of 222 nm, 254 nm, and 282 nm;

directing the photons to a substance to be disinfected, whereby the photons destroy or deactivate the DNA organic bonds and proteins of microorganisms;

exposing the surface to be disinfected to the generated photons of at least two wavelengths, wherein the exposing achieves a ninety percent kill of microorganisms in a time period of less than one second.

61. Based on publicly available information, the accused Representative Microplasma Board Products practice each limitation of and infringe at least claim 1 of the '605 patent. Larson describes its Representative Microplasma Board Products as using one or more 222 nm light source(s). *See, e.g.*, Ex. 5 at 1 (marketing a “microplasma board that emits far-UV 222 nm germicidal light”). On information and belief, Larson’s Representative Microplasma Board Products generate UV light in multiple wavelengths, including 222 nm and 254 nm. *See* ¶¶ 45-46, *supra*; Exs. 12-13.

62. 222 nm UV light from the Representative Microplasma Board Products is “direct[ed] . . . to a substance to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 1, '605 patent at claim 1. Larson markets the Representative Microplasma Board Products to “disinfect[] 99% of viruses, bacteria, mold and spores from ceilings in occupied areas.” *See, e.g.*, Ex. 6 at 1.

63. On information and belief, exposure to light from the Representative Microplasma Board Products “achieves a ninety percent kill of microorganisms in a



time period of less than one second.” *See* Ex. 1, ’605 patent at claim 1. Larson markets the Representative Microplasma Board Products as “inactivat[ing] 99% viruses, bacteria, mold and spores,” and “[t]here is no waiting period associated with UV treatment[.]” *See, e.g.*, Ex. 4 at 3.

64. Based on publicly available information, the accused Representative Excimer Lamp Products practice each limitation of and infringe at least claim 1 of the ’642 patent. Larson describes its Representative Excimer Lamp Products as using one or more 222 nm light source(s). *See, e.g.*, Ex. 7 at 1 (“This ozone-free unit offers 222nm UV-C output.”). On information and belief, Larson’s Representative Excimer Lamp Products generate UV light in multiple wavelengths, including 222 nm and 254 nm. *See* ¶¶ 45-46, *supra*; Exs. 12-13.

65. 222 nm UV light from the Representative Excimer Lamp Products is “direct[ed] . . . to a substance to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 1, ’605 patent at claim 1. Larson markets the Representative Excimer Lamp Products as a “powerful and sleek lighting solution for restaurants, businesses, busy locations and occupied areas,” and “in the proper setting kills up to 99.9% of viruses, mold, spores and bacteria.” *See, e.g.*, Ex. 8 at 2.

66. On information and belief, exposure to light from the Representative Excimer Lamp Products “achieves a ninety percent kill of microorganisms in a time period of less than one second.” *See* Ex. 1, ’605 patent at claim 1. Larson markets the Representative Excimer Lamp Products as “inactivat[ing] 99% viruses, bacteria,

mold and spores,” and “[t]here is no waiting period associated with UV treatment[.]”  
*See* Ex. 4 at 3.

67. Based on publicly available information, the accused Representative Excimer Bulb Products practice each limitation of and infringe at least claim 1 of the '605 patent. Larson describes its Representative Excimer Bulb Products as using a 222 nm light source. *See* Ex. 10 at 2 (“This 90-watt excimer lamp offers 80 uW/cm<sup>2</sup> UV intensity at 222nm UV wavelength.”). On information and belief, Larson’s Representative Excimer Bulb Products generate UV light in multiple wavelengths, including 222 nm and 254 nm. *See* ¶¶ 45-46, *supra*; Exs. 12-13.

68. 222 nm UV light from the Representative Excimer Bulb Products is “direct[ed] . . . to a substance to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 1, '605 patent at claim 1. Larson markets the Representative Excimer Bulb Products, like the Sanitation Portal, as able to “disinfect 99% of viruses, bacteria, mold and spores at entry/exit points and high traffic areas.” *See, e.g.*, Ex. 11 at 2.

69. On information and belief, exposure to light from the Representative Excimer Bulb “achieves a ninety percent kill of microorganisms in a time period of less than one second.” *See* Ex. 1, '605 patent at claim 1. Larson markets the Representative Excimer Bulb Products as “inactivat[ing] 99% viruses, bacteria, mold and spores,” and “[t]here is no waiting period associated with UV treatment[.]”  
*See* Ex. 4 at 3.

70. Larson indirectly infringes the '605 patent as provided by 35 U.S.C. § 271(b) by actively inducing others, including distributors and customers who purchase and use the Accused Products, to commit direct infringement of one or more claims of the '605 patent.

71. Larson's affirmative acts of providing at least spec sheets, instructions, white papers, manuals, training, guides, marketing materials, and/or demonstrations induces distributors and customers to use the Accused Products in a manner intended by Larson to cause direct infringement of the '605 patent. Furthermore, Larson provides suggested applications to customers for each of the Accused Products to use the 222 nm lamps to "direct [the photons] . . . to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms" in occupied spaces. *See* Exs. 4-11. And Larson intends for and advertises that its Far-UV 222 nm products kill 99% of viruses, bacteria, mold and spores. *Id.*

72. Larson performed the acts that constitute inducement with knowledge or at least willful blindness that the induced acts would constitute infringement. At least through the filing of this Complaint, Larson has received actual notice that its distributors and customers directly infringe the '605 patent and that its own acts induce such infringement. Prior to that, Larson received actual knowledge that its customers directly infringe the '605 patent at least as early as October 2020, when patent counsel for HEO3 sent Laron's CEO a letter describing the portfolio and Larson's infringing conduct. Ex. 3.

73. Larson also indirectly infringes the '605 patent as provided by 35 U.S.C. § 271(c) by contributing to infringement of one or more claims of the '605 patent by others, including Larson's distributors and customers who purchase and use the Accused Products.

74. Larson's affirmative acts of selling infringing sanitization products and providing those products to distributors and customers contribute to the infringement of the '605 patent. The Accused Products are specially made or adapted for use in infringement of the '605 patent and are not staple articles of commerce suitable for substantial noninfringing use.

75. Larson contributed to the infringement of others with knowledge or at least willful blindness that the Accused Products are specially made or adapted for use in an infringement of the '605 patent and are not staple articles of commerce suitable for substantial noninfringing use. Through the filing of this Complaint, and at least as early as October 2020, Larson has received actual notice that its acts constitute contributory infringement.

76. Larson's infringement has been and continues to be willful and in reckless disregard for the '605 patent, without any reasonable basis for believing that it had a right to engage in the infringing conduct. *See* ¶¶49-54, *supra*.

77. Larson's continued infringement of the '605 Patent has damaged and will continue to damage Plaintiffs, who offer directly competing products. Larson's acts have caused, and unless restrained and enjoined, will continue to cause, irreparable injury and damage to Plaintiffs for which there is no adequate remedy at law.

**COUNT II**  
**(Infringement of U.S. Patent No. 9,700,642)**

78. Plaintiffs incorporate by reference the allegations of paragraphs 1-77 as if fully set forth herein.

79. The '642 patent, entitled "Method and Apparatus for Sterilizing and Disinfecting Air and Surfaces and Protecting a Zone from External Microbial Contamination," was duly and legally issued by the USPTO on July 11, 2017. *See* Ex. 2.

80. Mr. Neister is the owner of all rights, title, and interest in and to the '642 patent and HEO3 is its exclusive licensee. Mr. Neister and HEO3 are entitled to sue for past and future infringement.

81. Larson performed the acts that constitute inducement with knowledge or at least willful blindness that the induced acts would constitute infringement. Through the filing of this Complaint, Larson has received actual notice that its customers directly infringe the '642 patent and that its own acts induce such infringement. Prior to that, Larson received actual knowledge that its distributors and customers directly infringe the '642 patent at least as early as October 2020, when patent counsel for HEO3 sent a letter to Larson's CEO notifying him of Mr. Neister's patent portfolio and Larson's infringement. *See* Ex. 3.

82. Larson has directly infringed—literally and/or under the doctrine of equivalents—the '642 patent by making, using, selling, offering for sale in the United States, and/or importing into the United States sanitization equipment that

practice one or more claims of the '642 patent, including but not limited to the Accused Products.

83. For example, claim 1 of the '642 patent recites:

1. A process for destroying a DNA or RNA of a microorganism on a substance or surface comprising the steps of:

generating photons of at least one wavelength corresponding to a peak adsorption wavelength of DNA or RNA, the at least one wavelength being at least one of 222 nm and 282 nm;

directing the photons to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms; and

wherein the substance or surface to be disinfected is human or animal skin.

84. Based on publicly available information, the accused Representative Microplasma Board Products practice each limitation of and infringe at least claim 1 of the '642 patent. Larson describes its Representative Microplasma Board Products as using one or more 222 nm light source(s). *See, e.g.*, Ex. 5 at 1 (marketing a “microplasma board that emits far-UV 222 nm germicidal light”).

85. 222 nm light from the Representative Microplasma Board Products is “direct[ed] . . . to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 2, '642 patent at claim 1. Larson markets the Representative Microplasma Board Products to “disinfect[] 99% of viruses, bacteria, mold and spores from ceilings in occupied areas.” *See, e.g.*, Ex. 6 at 1.

86. The Representative Microplasma Board Products are used “wherein the substance or surface to be disinfected is human or animal skin.” *See* Ex. 2, '642

patent at claim 1. Larson markets the Representative Microplasma Board Products as “eye and skin safe for humans, allowing the lamps to be used in occupied areas safely with minimum risk.” *See, e.g.*, Ex. 6 at 2.

87. Based on publicly available information, the accused Representative Excimer Lamp Products practice each limitation of and infringe at least claim 1 of the '642 patent. Larson describes its Representative Excimer Lamp Products as using one or more 222 nm light source(s). *See* Ex. 7 at 1 (“This ozone-free unit offers 222nm UV-C output.”).

88. 222 nm light from the Representative Excimer Lamp Products is “direct[ed] . . . to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 2, '642 patent at claim 1. Larson markets the Representative Excimer Lamp Products as a “powerful and sleek lighting solution for restaurants, businesses, busy locations and occupied areas,” and “in the proper setting kills up to 99.9% of viruses, mold, spores and bacteria.” *See, e.g.*, Ex. 8 at 2.

89. The Representative Excimer Lamp Products are used “wherein the substance or surface to be disinfected is human or animal skin.” *See* Ex. 2, '642 patent at claim 1. Larson markets the Representative Excimer Lamp Products as “eye and skin safe for humans, allowing the lamps to be used in occupied areas safely with minimum risk.” *See, e.g.*, Ex. 8 at 2.

90. Based on publicly available information, the accused Representative Excimer Bulb Products practice each limitation of and infringe at least claim 1 of the '642 patent. Larson describes its Representative Excimer Bulb Products as

using a 222 nm light source. *See* Ex. 10 at 2 (“This 90-watt excimer lamp offers 80 uW/cm<sup>2</sup> UV intensity at 222nm UV wavelength.”).

91. 222 nm light from the Representative Excimer Bulb Products is “direct[ed] . . . to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms.” *See* Ex. 2, ’642 patent at claim 1. Larson markets the Representative Excimer Bulb Products, like the Sanitation Portal, as able to “disinfect 99% of viruses, bacteria, mold and spores at entry/exit points and high traffic areas.” *See, e.g.,* Ex. 11 at 2.

92. The Representative Excimer Bulb Products are used “wherein the substance or surface to be disinfected is human or animal skin.” *See* Ex. 2, ’642 patent at claim 1. Larson markets the Representative Excimer Bulb Products as “powerful sanitation solutions that has eye and skin safe features for industrial sites and commercial facilities” thus “making applications suitable in occupied areas requiring sanitation.” Ex. 11 at 2.

93. Larson indirectly infringes the ’642 patent as provided by 35 U.S.C. § 271(b) by actively inducing others, including customers who purchase and use the Accused Products, to commit direct infringement of one or more claims of the ’642 patent.

94. Larson’s affirmative acts of providing at least spec sheets, instructions, white papers, manuals, training, guides, marketing materials, and/or demonstrations induces distributors and customers to use the Accused Products in a manner intended by Larson to cause direct infringement of the ’642 patent.



Furthermore, Larson provides suggested applications to customers for each of the Accused Products to use the 222 nm lamps to “direct [the photons] . . . to the substance or surface to be disinfected, whereby the photons are selected to destroy a plurality of chemical bonds within the DNA or RNA of the microorganisms” in occupied spaces. *See* Exs. 4-11.

95. Larson performed the acts that constitute inducement with knowledge or at least willful blindness that the induced acts would constitute infringement. Through the filing of this Complaint, Larson has received actual notice that its distributors and customers directly infringe the '642 patent and that its own acts induce such infringement. Prior to that, Larson received actual knowledge that its distributors and customers directly infringe the '642 patent at least as early as October 2020, when patent counsel for HEO3 sent a letter to Larson's CEO notifying him of Mr. Neister's patent portfolio and Larson's infringement. *See* Ex. 3.

96. Larson also indirectly infringes the '642 patent as provided by 35 U.S.C. § 271(c) by contributing to infringement of one or more claims of the '642 patent by others, including Larson's distributors and customers who purchase and use the Accused Products.

97. Larson's affirmative acts of selling infringing sanitization products and providing those products to distributors and customers contribute to the infringement of the '642 patent. The Accused Products are specially made or adapted for use in infringement of the '642 patent and are not staple articles of commerce suitable for substantial noninfringing use.

98. Larson contributed to the infringement of others with knowledge or at least willful blindness that the Accused Products are specially made or adapted for use in an infringement of the '642 patent and are not staple articles of commerce suitable for substantial noninfringing use. Through the filing of this Complaint, and at least as early as October 2020, Larson has received actual notice that its acts constitute contributory infringement.

99. Larson's infringement has been and continues to be willful and in reckless disregard for the '642 patent, without any reasonable basis for believing that it had a right to engage in the infringing conduct. *See* ¶¶49-54, *supra*.

100. Larson's continued infringement of the '642 patent has damaged and will continue to damage Plaintiffs, who offer directly competing products. Larson's acts have caused, and unless restrained and enjoined, will continue to cause, irreparable injury and damage to Plaintiffs for which there is no adequate remedy at law.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs respectfully request the following relief:

- A. For entry of judgment by this Court against Larson and in favor of Plaintiffs in all respects, including that:
  - 1. Larson has and continues to directly infringe and/or indirectly infringe, by way of inducement and/or contributory infringement, the Asserted Patents;
  - 2. Larson's infringement of the Asserted Patents was and continues to be willful; and
- B. An order permanently enjoining Larson, its officers, agents, servants, employee, and attorneys, all parent, subsidiary, and affiliate corporations and other related business entities, and all other persons or entities acting in concert, participation, or in privy with one or more of them, and their successors and assigns, from infringing, contributing to the infringement of, or inducing others to infringe the Asserted Patents;
- C. For damages arising from Larson's infringement of the Asserted Patents, together with pre-judgment and post-judgment interest, and that such damages be trebled as provided by 35 U.S.C. § 284;
- D. An Order declaring that Plaintiffs are the prevailing parties and that this is an exceptional case, awarding Plaintiffs their costs, expenses,

disbursements, and reasonable attorney fees under 35 U.S.C. § 285  
and all other applicable statutes, rules, and common law; and

E. Such other and further relief as this Court may deem just and proper.

**DEMAND FOR JURY TRIAL**

Plaintiffs respectfully request a trial by jury on all issues triable thereby.

Dated: May 21, 2021

Respectfully submitted,

By: /s/ Jill R. Carvalho

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**CERTIFICATE OF SERVICE**

I hereby certify that on May 21, 2021, I electronically filed the foregoing document with the Clerk of the Court by using the CM/ECF system, which will send a notice of electronic filing to all counsel of record.

/s/ Jill R. Carvalho  
Jill R. Carvalho